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A FEW MORE PIONEER PLANTS FOUND IN THE METAMORPHIC REGION OF ALABAMA AND GEORGIA

BY ROLAND M. HARPER

In a few comparatively recent papers* I have announced the discovery in the Piedmont region and mountains of Alabama and Georgia of several species of plants previously supposed to be confined to the coastal plain, or nearly so; and as every county in Alabama and all but a few of the more inaccessible ones in Georgia have now been visited by botanists, it seemed a short time ago as if the possibility of additional discoveries of this kind must be almost exhausted. But in June of this year, when I had occasion to spend a few days among the mountains of eastern Alabama and western Middle Georgia, I found that this was by no means the case.

On the 6th and 7th of the month named I was on the Blue Ridge where it forms the boundary between Talladega and Clay Counties, Alabama, a few miles south of Cheaha Mountain, the highest point in that state.† (All the plants mentioned below as occurring on this ridge were seen on the southeastern slope, in Clay County, within a few miles of Erin and Pyriton.) On the 8th and 9th I explored parts of the Pine Mountains of Meriwether County, Georgia, within a few miles of Bullochville (Warm Springs) and Woodbury, where I had found many interesting things in 1901 and 1908.

There are some interesting similarities and differences between

*For Alabama, *Torreya* 6: 111-117; Bull. Torrey Club 33: 523-536. 1906; for Georgia, Bull. Torrey Club 30: 294. 1903; 36: 583-593. 1909.

†Its altitude is supposed to be 2,407 feet. Some interesting notes on the vegetation of this ridge can be found on pages 58-64 of Mohr's *Plant Life of Alabama*.

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these two ranges of mountains. Each consists for the most part of a single prominent ridge trending approximately northeast and southwest, and they are also alike in being formed of sandstone rocks (presumably pre-Cambrian in age, for they contain no fossils), and having long-leaf pine more abundant than any other kind of tree on their slopes. The Pine Mountains, however, are about 1,000 feet lower than the Blue Ridge and half a degree farther south (being the southernmost mountains in the eastern United States).

Some of the most interesting finds in the way of coastal plain plants in both states were made in wet ravines on the mountain slopes. These ravines all contain small clear streams, beginning gradually near their heads and varying in length with the wetness of the season, and of course descending rapidly in the usual manner of mountain rivulets. The bottoms and sides of the ravines are strewn with loose subangular rocks of various sizes,

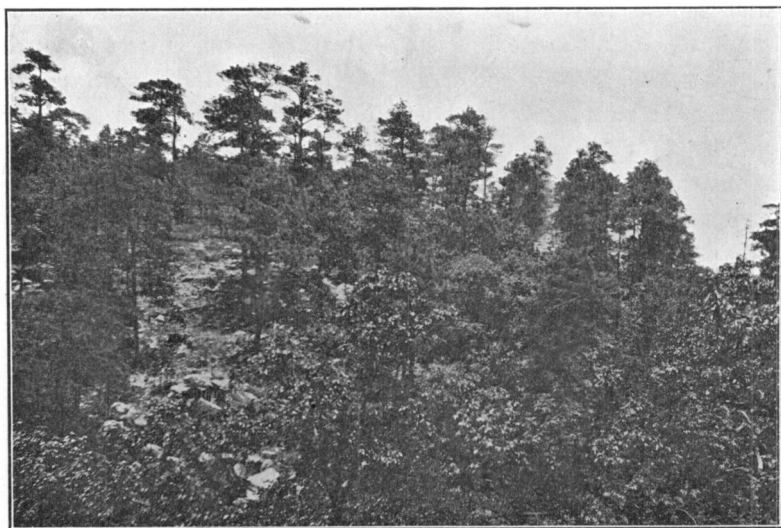


FIG. 1. *Pinus palustris* on rocky slope of a ravine on a spur of the Blue Ridge northwest of Pyriton, Alabama. June 7, 1910.

but there are very few cliffs or waterfalls, at least in the smaller ones, their slopes being comparatively uniform. This is prob-

ably because the mountains are composed of essentially homogeneous rocks, without well-defined stratification, faults, etc.

In most parts of eastern North America ravines contain vegetation approaching the climax type, but here succession has not progressed very far, as shown by the large proportion of evergreens, etc. The vegetation of these mountain ravines bears about the same relation to that of the adjacent pine-covered slopes as that of branch-swamps in the wire-grass country of Georgia does to the surrounding pine-barrens,* and there are quite a number of species common to the corresponding habitats in the two otherwise very dissimilar regions. Analogous relations also exist between the dry mixed forests and the banks of streams on the Cumberland Plateau (Lookout Mountain, Sand Mountain, etc.) of Georgia, Alabama, and Tennessee, where succession has progressed a little farther, and the long-leaf pine has long ago disappeared, if it ever grew so far inland.

The following species (arranged in approximate order of abundance, etc.) were seen in mountain ravines in both states, in the week under consideration.

TREES: *Acer rubrum*, *Magnolia glauca*, *Liriodendron*, *Ilex opaca*, *Persea pubescens*, *Oxydendron*, *Pinus Taeda*.

SHRUBS AND WOODY VINES: *Alnus rugosa*, *Kalmia latifolia*, *Smilax laurifolia*, *Decumaria barbara*, *Myrica carolinensis*, *Symplocos tinctoria*, *Azalea nudiflora*. (Just about half the woody plants are evergreen.)

HERBS: *Osmunda cinnamomea*, *O. regalis*, *Lorinseria areolata*, *Galax aphylla*, *Carex crinita*.

In addition, *Fagus*, *Xolisma ligustrina*, *Viburnum nudum*, and *Dryopteris Noveboracensis* were noted in several such places in Alabama, and might have been seen in Georgia as well if I had examined as many ravines as I did in Alabama on this trip. Several species which were seen less frequently will be mentioned below.

Quite a number of other pioneer bog plants were found on June 9 in a moist meadow about half a mile east of Woodbury, Georgia, the same place where I had made some interesting

*See Ann. N. Y. Acad. Sci. 17: 62. 1906.

discoveries nearly nine years before.* Several species of more climax tendencies, though nevertheless mainly "austroriparian" in distribution, were found on the same day along the Flint River where it cuts through the Pine Mountains in a series of rather narrow gorges, and in the swamp of one of its tributaries, Cane Creek, on the north side of the mountains about two miles east of Woodbury.

The following annotated list of noteworthy plants also includes two species which were observed from a train between Birmingham and Pell City, Alabama, on June 4.

Halesia diptera L. Several unmistakable specimens (with full-grown fruit) of this little tree were seen on the banks of the Flint River in Meriwether County, Georgia, at the southeastern corner of an amphitheater-like valley about three miles in diameter known as "the Cove." It was not known outside of the coastal plain before, though Dr. Mohr had reported it from the vicinity of Auburn, Ala.,† which is pretty close to the fall-line.

Osmanthus americanus (L.) B. & H. Common in a wet ravine in the Pine Mountains near Nebula, a small station a few miles south of Warm Springs. This species was entirely new to the known flora of Middle Georgia, and even in Alabama I had not seen it so far above the fall-line.‡ Its leaves at this station were rather narrower than they usually are in its favorite habitat, coastal plain hammocks. Some of the trees bore an abundance of young fruit.

Ilex coriacea (Pursh) Chapm. (*I. lucida* T. & G.). In the same ravine; not common, but some of the bushes were over ten feet tall, which is about as large as this species ever grows. This does not seem to have been reported from outside of the coastal plain before, though Dr. Mohr cited specimens from one of the fall-line counties of Alabama, not very far from this new station.

Persea pubescens (Pursh) Sarg. Seen in one mountain ravine in Alabama, and in two or three in Georgia, both near the Flint River and near Nebula. Unmistakable specimens were collected near the latter place on June 8. Dr. Mohr knew this in Alabama

*See Bull. Torrey Club 30: 294, 326. 1903.

†Contr. U. S. Nat. Herb. 6: 66. 1901.

‡See Bull. Torrey Club 33: 536. 1906.

only from three extreme southern counties, Escambia, Baldwin and Mobile; and Professor Sargent in his Manual of Trees, 1906, restricts it to "Pine-barren swamps, . . . in the immediate neighborhood of the coast."

Nymphaea fluviatilis Harper. What I take to be this species was seen from the train, in the Cahaba River near Henry Ellen, in the eastern edge of Jefferson County, Alabama. In 1908 I had seen the same thing nearly as far from the coast in Middle Georgia.*

Myrica carolinensis Mill. As this was not known outside of the glaciated region and coastal plain until 1906, it might be worth while to mention here that small inconspicuous specimens of it, about knee-high, are not rare in damp ravines on the slopes of both the Blue Ridge and the Pine Mountains.

Pogonia divaricata (L.) R. Br. Rare in boggy places in mountain ravines in Clay County, Alabama, with *Osmunda cinnamomea* and several less common plants. Dr. Mohr knew this handsome orchid no farther inland than Tuscaloosa County, but Dr. Gattinger found it in the mountains of East Tennessee.

Pogonia ophioglossoides (L.) Ker. Although this is known from many scattered stations between the glaciated region and the coastal plain,† it is by no means a common plant in the highlands, and I had never seen it in Middle Georgia until I found several specimens in bloom in the meadow near Woodbury, previously mentioned.

Smilax laurifolia L. I have already reported this from the highlands of both states, but not from either of the mountain ranges under consideration, so it may be worth mentioning that I found it quite common in most of the wet ravines, as indicated in the foregoing habitat list.

Tillandsia usneoides L. In former years I had seen this characteristic coastal plain epiphyte along rocky banks of rivers a mile or two above the fall-line near Tallassee, Ala., and Columbus, Ga.,‡ but finding it among the Pine Mountains, over twenty miles from the fall-line in a straight line (and probably twice as

*See Bull. Torrey Club 36: 589. 1909.

†See Rhodora 8: 29. 1906.

‡See Bull. Torrey Club 33: 527-528; Ann. N. Y. Acad. Sci. 17: 266 1906.

far by water), was quite unexpected. It grows in the gorge of the Flint River, at about the same place already mentioned under *Halesia diptera*, on various trees, principally *Quercus alba*. Some of it was forty or fifty feet up in the air, and some low enough to be reached from the ground, but it was not at all abundant. It happened to be in bloom at the time I saw it, and it is probably holding its own pretty well.

Lachnocaulon anceps (Walt.) Morong. In the moist meadow near Woodbury; rather rare. Previously known only from the coastal plain and Lookout Mountain.*

Rhynchospora rariflora (Mx.) Ell. With the preceding, not rare. Previously known only from the coastal plain, but its occurrence here is perhaps not so surprising since it has recently been reported from New Jersey.†

Panicum gymnocarpon Ell. In the swamp of Cane Creek, Meriwether County, Georgia. Previously known only from the coastal plain, from Georgia to Texas. With it I noticed two other species of somewhat similar distribution (though already known from a few stations outside of the coastal plain), namely, *Commelina hirtella* Vahl and *Trachelospermum difforme* (Walt.) Gray.

Anchistea virginica (L.) Presl. Seen from the train, in a sort of meadow just east of Brompton, St. Clair County, Alabama. The only other stations between the glaciated region and coastal plain on record for this species seem to be those in Cherokee and Chilton Counties, Alabama, and Pike County, Georgia, described in my earlier papers.

TALLAHASSEE, FLORIDA

A FOSSIL FIG‡

BY T. D. A. COCKERELL

Among some specimens collected by my wife at Station 14, in the Miocene shales of Florissant, I find two which, on careful inspection, prove to be figs. The genus *Ficus* has been recog-

*See Torrey 6: 114; Ann. N. Y. Acad. Sci. 17: 268. 1906.

†W. Stone, Torrey 8: 16-17. 1908.

‡ Illustrated with the aid of the Catherine McManes fund.